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OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER WANG, CHUN CHENG	
			ART UNIT	PAPER NUMBER
			4171	
			NOTIFICATION DATE	DELIVERY MODE
			05/30/2008	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b> 10/584,464	<b>Applicant(s)</b> LORTZ ET AL.	
	<b>Examiner</b> Chun-Cheng Wang	<b>Art Unit</b> 4171	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. ____.                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>06/22/2006</u> .  | 6) <input type="checkbox"/> Other: ____.                          |

**DETAILED ACTION*****Double Patenting***

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 1-, 6, 8-9 and 12 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-4, 9, 11, 14 and 18 of U.S. Patent No. 6991190 B2. Although the conflicting claims are not identical, they are not patentably distinct from each other because the scope of the instant claims encompasses the scope of the reference claims. Applicants recite method of producing a finely divided dispersion of solid in instant claim 1 (lines 1-2) and the reference claim 1 recite process of the same. The differences is the instant application recite the grinding chamber is flooded with the dispersion (claim 1, line 5) and the conflicting claim recite the dispersion and members of vapor, partially condensed vapor of water or the combination (claim 1, lines 7-15). Instant application recite the liquid phase is

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aqueous (claim 2) but the patent recite water, organic compounds or the combination of water and organic compounds as liquid phase (claim 2). Both application and patent recite the same 1-70 wt% of solid content in predispersion (instant claim 4 and conflicting claim 4) and chamber pressure of at least 50 bar (instant claim 5 and conflicting claim 9). Instant application recite the dispersion contains dispersion agents and/or surfactants (claim 3), while conflicting application recite dispersion comprises a dispersion agent, a surface active substance or both (claim 3). Both application and patent recite the dispersion is cooled after leaving the chamber (instant claim 6 and conflicting claim 11, line 7), the grinding or reactor chamber is enclosed in a reactor housing (instant claim 9 and conflicting claim 1, lines 5-6), the same composition of solid (instant claim 8 and conflicting claim 14) and same size of nozzle bore (instant claim 12 and conflicting claim 12).

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The language “pumps, preferably high-pressure pumps” (claim 1, line 3) is indefinite. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and

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Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 1 recites the broad recitation "pumps" and the claim also recite "preferably high-pressure pumps" which is the narrower statement of the range/limitation.

### ***Claim Rejections - 35 USC § 102***

5. Claims 1-3, 7, 9-10 and 14-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Ito et al. (GB 2063695).

Regarding claim 1: Applicants claim method of producing a finely divided dispersion of solids having a mean particle size of 10 nm to 10  $\mu$ m, in which at least two flows of a predispersion are sprayed by means of pumps, preferably high-pressure pumps, through one nozzle each into a grinding chamber enclosed by a reactor housing onto a collision point, characterized in that the grinding chamber is flooded with the predispersion and the finely divided dispersion is removed from the grinding chamber by the overpressure of the predispersion continuing to flow into the grinding chamber.

Ito et al. disclose a method to disperse a kind of liquid in another kind of liquid to obtain an emulsion or disperse powdered solid particle (page 1, line 6-9) to obtain a super fine particle dispersed substance or highly dispersed product (page 1, lines 46-49). Ito et al. disclose an average diameter of dispersed grains is 0.2  $\mu\text{m}$  (Table 1, row 5). Ito et al. disclose process of pre-mixed mixture transported by a high pressure pump and the mixture is divided into two flows by passing through flow holes and are supplied to the nozzles (page 1, lines 90-95) and then the mixture is dispersed on the colliding surface of the jetting surface (page 1, lines 106-108). Ito et al. also disclose the highly dispersed mixture was guided through a space surrounded with walls of outlet section and then flow to the outlet orifice (page 1, lines 109-112).

6. Regarding claims 2 and 3: Applicants claim the liquid phase of the predispersion is aqueous (claim 2) and the dispersion contains dispersion agent and/or surfactants (claim 3).

Ito et al. disclose a dispersing aid is added to a mixture of two kinds of liquid which are not miscible with each other for emulsification (page 1, lines 87-89).

7. Regarding claim 7: Applicants claim the dispersion obtained after leaving the grinding chamber is sprayed into the grinding chamber several times.

Ito et al. disclose the collided liquid which was guided through a space surrounded with walls of outlet section and flow to the outlet orifice (page 1, lines 108-112) and the colliding section is not limited to one, but collisions can be done at a plurality of places (page 1, lines 120-122).

8. Regarding claim 9: Applicants claim a device for performing the method in accordance with claim 1, the predispersion is sprayed by at least two nozzles each having an associated pump

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and feeding into a grinding chamber surrounded by reactor housing onto a common collision point and the dispersion leaves the grinding chamber through an opening in the reactor housing.

Ito et al disclose two or more flows are jetted through a plurality of nozzles to the same spot (page 1, lines 72-73) inside the dispersion apparatus of the inner wall is not worn out (page 1 lines 78-79) and then the dispersion is guided and flows to the outlet orifice (page 1, lines 99-102).

9. Regarding claim 10: Applicants claim the nozzles can be aligned with a common collision point.

Ito et al disclose two or more flows are jetted through a plurality of nozzles to the same spot (page 1, lines 72-73).

10. Claims 9-10 and 14-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Serafin (US 5927852).

11. Regarding claim 9 and 10: Applicants claim a device for performing the method in accordance with claim 1, the predispersion is sprayed by at least two nozzles each having an associated pump and feeding into a grinding chamber surrounded by reactor housing onto a common collision point and the dispersion leaves the grinding chamber through an opening in the reactor housing (claim 9) and the nozzles can be aligned with a common collision point (claim 10).

Serafin discloses apparatus including a high pressure pump and a series of mixing zones (column 1 lines 56-58). The preferred apparatus and method comprises impinging pressurized streams up each other (column 2, lines 23-24). The individual impingement chamber assemblies includes an input manifold in which the process stream is split into two or more individual

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streams, an output manifold which contains the impingement chamber in which the individual streams are recombined, and a passage directing the individual streams into the impingement chamber. The exit streams can each lead to an individual orifice (or nozzle) in the next impingement chamber (column 2, lines 25-31, 50-52).

12. Claims 14 depend on claim 9 and claim 15 depends on claim 14: Applicants claim the collision point is surrounded by a material that is disposed in such a way that, in the event of a misalignment of the nozzles, the predispersion jet collides with said material (claim 14) and the material surrounding the collision point is identical in its chemical composition to the substance to be dispersed or becomes identical as a result of chemical reaction under the dispersion conditions (claim 15).

Ito et al. disclose process of pressurizing one or more component stream(s) by pump, the pressurized streams then pass, i.e. pushed, through mixing zone(s) (Figure 1). One could anticipate the chambers are flooded with dispersion and in the event of a misalignment of the nozzles; the predispersion jet collides with dispersion material.

13. Claim 15 depends on claim 14: Applicants claim the device material surrounding the collision point is identical in its chemical composition to the substance to be dispersed or becomes identical as a result of chemical reaction under the dispersion conditions. As mentioned above the chambers are flooded with dispersion and one would also anticipate the collision point surrounding area becomes identical in its chemical composition to the substance to be dispersed due to high speed collision of the substance.

14. Claims 14 and 15 are further rejected due to the apparatus claims are not structurally distinguishable from the prior art:

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While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. >*In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997) (The absence of a disclosure in a prior art reference relating to function did not defeat the Board's finding of anticipation of claimed apparatus because the limitations at issue were found to be inherent in the prior art reference); see also *In re Swinehart*, 439 F.2d 210, 212-13, 169 USPQ 226, 228-29 (CCPA 1971); *In re Danly*, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). "Apparatus claims cover what a device *is*, not what a device *does*." *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990) (emphasis in original).

### ***Claim Rejections - 35 USC § 103***

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

16. Claims 4-6, 8 and 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ito et al. (GB 2063695) as applied to claims 1-3, 7, 9-10 and 14-15 above, further in view of Serafin (US 5927852).

17. Claim 4 depends on claim 3 which depends on claim 1: Applicants claim the proportion of solids in the predispersion is between 1 and 70 wt%.

Claims 1 and 3 were rejected over Ito et al., see claim rejection 35 USC 102, and will be incorporated. Ito et al. are silent on the solid content in the dispersion.

18. Claim 5 depends on claim 4: Applicant claim the predispersion is sprayed into the grinding chamber at a pressure of at least 50 bar.

Ito et al. disclose the pressure difference between jetting orifices may adjusted to 10-2000 Kg/cm<sup>2</sup>, preferably 50-1500 Kg/cm<sup>2</sup>, i.e. 49-1471.5 bar (page 2, lines 41-42).

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19. Regarding claim 6: Applicants claim the dispersion is cooled after leaving the grinding chamber.

Ito is silent on cooling of the dispersion.

20. Claim 8 depends on claim 4: Applicants claim organic, inorganic particles and/or mixtures are used as solids.

Ito et al. are silent on the solid used.

21. Ito et al. teach all the limitations in claims 1, 3-6 and 8 except (a) the wt% of solid content, (b) cooling of the dispersion and (c) the organic, inorganic particles and/or mixtures are used as solids.

22. Regarding point (a): Serafin discloses 8.12 wt% of solid content in the dispersion mixture (calculated from Example, column 4, lines 38-43).

23. Regarding point (b): Serafin discloses a heat exchanger was used both before the pump and after series of impingement zones (Example, line 1-2). Serafin also discloses the mixing processes are known to generate substantial heating of the process stream, thus the heat exchangers have been used before and/or after the mixing process (column 1, lines 21-23).

24. Regarding point (c): Serafin discloses a mixture of carbon black, TiO<sub>2</sub>, Alumina and binder (nitrocellulose and polyurethane) was used as solids (Example line 40-44) in dispersion.

25. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains could combine teachings from Ito et al. and Serafin to implement heat exchangers for heat sensitive solid aqueous dispersion.

26. Claim 11 depends on claim 9: Applicants claim the nozzles are composed of oxides, carbides, nitrides, diamond or mixture thereof. Claim 9 was rejected over Ito et al. above and will be incorporated thereafter.

Ito et al. are silent on the nozzle material. Serafin discloses the orifice should be constructed of a hard and durable material. Suitable materials include sapphire, tungsten carbide, stainless steel, diamond, ceramic materials, cemented carbides, and hardened metal compositions (column 3, lines 4-7).

27. Claim 12 depends on claim 9: Applicants claim the nozzles have bores having a diameter of 0.5-2000  $\mu\text{m}$ .

Ito et al. are silent on the size of the nozzle bore. Serafin discloses preferred orifice diameters range from 0.005 to 0.05 inches (0.1-1 mm), i.e. 100-1000  $\mu\text{m}$  (column 3, lines 20-21).

28. Claim 13 depends on claim 9: Applicants claim the nozzles are identical in their chemical composition with the substance to be dispersed or become identical as a result of chemical reaction under the dispersion conditions.

Ito et al. are silent on the orifice material related to the substance to be dispersed and the chemical reaction under the dispersion condition.

The “nozzles become identical in chemical composition with the substance as a result of chemical reaction under the dispersion conditions” is not an apparatus claim either structurally or functionally. It is inherent from the high flow rate of soft substance to be dispersed which collide on the nozzle wall and surrounding area and could stick on it. Serafin discloses suitable materials

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for the orifice include sapphire, tungsten carbide, stainless steel, diamond, ceramic materials, cemented carbides, and hardened metal compositions (column 3, lines 4-7).

29. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains could chose the nozzles with same composition of the substance to be dispersed or hardened material to prevent the chipping of the nozzle material from contaminate the dispersion.

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chun-Cheng Wang whose telephone number is (571)270-5459. The examiner can normally be reached on Monday to Friday w/alternate Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Tarazano can be reached on 571-272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/ccw/